SASWATI DAS

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OBJECTIVE:

To obtain a design and/or development position in embedded systems, computer architecture, signal processing, and/or communications in a company that offers a creative and challenging environment for technological advancement.

EDUCATION:

- **MS** in Electrical Engineering; **State University of New York at Buffalo**; Specialization: Signal Processing and Communications. GPA: 3.534 (Graduation date – Feb 1, 2009)
- Bachelors of Engineering in Instrumentation; Gauhati University, India; Aggregate: **77% (1st Class, Honors) ; University Rank – 2**

TOTAL WORK EXPERIENCE: 3 years

- **Project Engineer – Embedded Group;** Dana India Technical Centre (DITC), a 100% subsidiary of **Dana Corporation**, USA (www.dana.com) ; March 2005 to July 2007
- **Trainee Engineer** – **Research & Development (R&D) Section** – Embedded Group ; HPL Socomec Pvt. Ltd. (www.hplindia.com) ; Dec 2004 to Feb 2005
- **Team Leader – R&D (Hardware) Section** - Microcomm India Limited, New Delhi (www.microcommindia.com); Sept 2004 to Nov 2004
- **Vocational Trainee** — Instrumentation Sector; **Indian Oil Corporation** (www.iocl.com), Guwahati ; Aug 2002 to Sept. 2002

RESEARCH EXPERIENCE:

- To improve finite length accuracy for fixed point FFT via error feedback. ***Mentor:*** Dr. Adly T. Fam
- To develop a complicated filter with less area and power utilization than conventional ones from a seed or kernel filter having simple computational properties, via successive iterations. ***Mentor:*** Dr. Adly T. Fam

EXPERIENCE HIGHLIGHTS:

- **32-bit Digital Signal Processor (DSP)**: TMS320F2810PBKA
- **16-bit Mixed Signal Processor (MSP)**: MSP430F1232IPW
- **32-bit Microcontroller (MCU):** MC9S12XEP100
- **12-bit MSP**: C8051f021
- **8-bit MCU**: AT89C4051, AT89C2051, AT89C51RC2, ST72324K, ATMEGA128, MC9S08QG4, MC68HC908QT4.
- **Serial Communication Protocols and Standards**: SCI, SPI, I2C, MODBUS, REFLEX, RS232, RS485.
- **Encoding Formats**: NRZ format, Manchester Encoding format
- **Compilers/WinIDE**: Keil uVision3, Metrowerks CodeWarrior (Version: 5.6.1.1506), Freescale CodeWarrior (Version: 5.7.0), C2000 Code Composer Studio (Version: 2.20.00), IAR Embedded Workbench.
- **GUI**: ICD08SZ (Version: 2.14) for In-Circuit Debugging, Prog08SZ (Version: 2.12) for Flash Programming, SDFlash Version 1.60.00 for Flash Programming through Spectrum Digital JTAG Emulator, ST Visual Stick - Programmer, Winbus V1.1 serial link tester.
- **Debuggers**: USB-MON08-Multilink for HC08 MCU, USB HCS08/HCS12 Multilink (with BDM Cables) Rev. B 0105
- **Emulators**: Spectrum Digital XDS510PP (with JTAG cables)
- **Languages**: C, MATLAB, Assembly language, C++, Data Structures, Verilog
- **Simulation Tools for IC and FPGA** : Ansoft Designer SV2, ModelSim XE III 6.3c
- **FPGA**: Xilinx Spartan 3E- 100
- **Circuit and Layout CAD Tools** : Xilinx ISE 10.1, Protel
- **Operating Systems**: Microsoft Windows.
- **Software packages**: MS Office, MS Visio Studio 2003 for flow-charts.
- **Oscilloscopes and Signal Generators**: TPS2024
- **QMS**: ISO 9001

PROFESSIONAL EMPLOYMENT: PROJECTS

Company Name: DITC; Customer Name: Bendix Corporation.

- ***Developed a customized flash-loader for MC9S08QG4*** *MCU* using a 32 bit DSP, TMS320F2810 as the master. The project is innovative as the master communicates with slave using only the two power line carrier wires.
- ***Developed a customized bootloader for MC68HC908QT4*** *MCU* using a 32 bit DSP from Texas Instruments, TMS320F2810 as the master. ***The project is being considered for patent by our company.***
- Converted the manufacturer-supplied Slave side code of Developer's Serial Bootloader for MC68HC08 family of microcontrollers from Assembly Language to C language.
- Developed a complete firmware from scratch for the fail-safe module of the main Electronic control unit (ECU) of a tractor which uses MC68HC908QT4 MCU as the controller of the fail-safe module and MC9S12D64 16-bit microcontroller as the main controller of the ECU unit.

- Developed firmware for the Wheel End Sensor of a trailer (consisting of the 8-bit MCU MC68HC908QT4) which resides inside the wheel axle and provides wheel parameters (wheel speed, rotation direction, temperature, acceleration, etc.) to the main ECU of the trailer (consisting of the DSP- TMS320F2810PBKA) using a standard two wire interface.
- Provided maintenance of firmware for the ECU of a trailer which uses a 32-bit DSP viz. TMS320F2810PBKA as its main controller and a 16-bit MSP viz. MSP430F1232IPW as the controller of its fail-safe module.
- Developed a firmware module for spectral analysis of signals feed into the 32-bit DSP viz. TMS320F2810PBKA (used as the main controller of ECU of a tractor) using DFT by correlation method.
- Developed firmware for a 32-bit MCU viz. MC9S12XEP100 used as the controller of the ECU of the tractor which performs hardware testing, manual and automatic control and faults detection of the output drivers like lamp, buzzer and solenoids valves used for maintaining proper tire pressure under different road conditions.

Company Name: DITC; Customer Name: General Motors.
- Worked in the firmware development and maintenance of a Data Logger and Operator Interface Module (OIM) used in the security system modules of automobiles.

Company Name: HPL Socomec Pvt. Ltd.
- Developed firmware (in Assembly language on ST72324k MCU) for reading and writing of parameters of 3 phase energy meter using half duplex RS485 serial communication and MODBUS protocol.
- Developed firmware (in Assembly Language) to display the parameters of the Energy meter on a single line LCD GDM063 (based on HT1621 LCD Driver) & a three line LCD YM1622 (based on HT1622 controller) using ST72324k MCU.

Company Name: Microcomm India Limited.
- Participated in designing a Data Logger used for processing inputs from Environmental Sensors. The circuit uses an 8 channel, 16 bit ADC converter (ADS8344) to digitize analog inputs which are then processed using ATMEGA128 MCU and a CPLD.

ACADEMICS:
Graduate Projects:
- Developed an algorithm for representing 3D binary images by octree using MATLAB.
- Implemented S-parameters of GaAs HEMT Avago ATF-35143 in Ansoft Designer SV environment assuming 50 ohm impedances of source and load and plotted graphs for S-parameters, noise figure and stability factor within 1-10 GHz range and then improved the stability factor by inserting a small inductor as negative current feedback.
- Generated 4 independent Rayleigh fading channels for a non-coherent MIMO system with 2 transmit antennas using Jakes' fading simulator and then compared the symbol error rate versus SNR curves for 1 and 2 receive antennas.
- Designed an electronic combination lock using Xilinx Spartan-3E – 100 FPGA. Programming is done in Verilog.
Undergraduate Project:
- Devised a fiber optic sensor for measurement of air flow rate through high pressure tunnel.
- Devised an 8085 microprocessor based object counter.

Graduate Coursework:
Digital Signal Processing, High Speed Communication Circuits, Probability and Stochastic processes, Computer Vision and Image Processing, MIMO Wireless Communications, Principles of Modern Digital Communications, Computer Architecture

HONORS AND ACHIEVEMENTS:
- Our Team in Dana India Technical Centre received **'A' (Excellent)** Grade in the half-yearly Customer Satisfaction Feedback Report in 2005 and 2006 and won the **Revolving trophy** in the Internal ISO audit held quarterly for Best QMS Performance in 2006.
- Tuition **Scholarship from the University of Rochester** in Fall 2007.
- Had got offer of admission for direct PhD program from **University of Minnesota-Twin Cities** and State University of New York – Stony Brook and for MS program from **University of California – Irvine** and **University of Massachusetts - Amherst** in Fall 2007.
- Qualified GRE test with a score of **800/800** in quantitative section.
- Qualified **Graduate Aptitude Test of Engineering-2004** with **91.24 percentile** and **All India Rank of 461**.
- Qualified **Common Admission Test - 2003** with **98.13 percentile** in Quantitative Section **among approx. 150000 candidates in India.**
- Certificate **of Excellence** from Children Trust of India for **remarkable   performance** in **All India Talent Search Examination -** 1992.
- **Awarded Merit Scholarship by Gauhati University** from 2000-2003

AWARDS AND COMMUNITY/LEADERSHIP ACTIVITIES:
Association with **Rotary Club**, India, **Help age India**, **Don Bosco Association**, India; **Mentorship** in Laboratory & Research Project of **Excelsior Scholar students** held by **University of Buffalo**; **Winner of State Level Quiz competition and several poem-writing competitions;** Publication of poems & articles in Hindi and English; W**inner in State Level Athletics –** Short Distance Race, Relay Race and Long Jump, Participation in Discussion and Debates.